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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

BIBBINS, LATANYA

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/572,941	Applicant(s) KURODA, KAZUO	
	Examiner LaTanya Bibbins	Art Unit 2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 December 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-20 is/are rejected.
- 7) ☒ Claim(s) 12, 13, 15 and 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 December 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. In the remarks filed on December 29, 2008, Applicant amended claims 12, 13, 15 and 17 added claims 18-20, and submitted arguments for allowability of pending claims 12-20.

Response to Arguments

2. Applicant's arguments with respect to claims 12-20 have been considered but are moot in view of the new grounds of rejection.

Claim Objections

3. **Claims 12, 13, 15 and 20** are objected to because of the following informalities:

Claims 12, 13, 15 and 20 recite "a tabular laser beam." It is unclear what is meant by a "tabular" laser. Claim 20 also refers to "a flat surface" of the tabular laser beam which is also unclear.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 12-18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horimai (US Patent Number 7,002,891 B2) in view of Ishii et al. (US Patent Number 4,012,108).

Regarding claim 12, Horimai discloses an information recording apparatus for recording record information onto a recording medium having an optically recordable recording surface (Figure 1), comprising: a laser light source (Figure 1 element 12); a one-dimensional spatial modulating device for performing one-dimensional spatial modulation in the direction extending linearly with respect to the laser beam, on the basis of the record information (Figure 1 elements 17 and 25 and the discussion column 13 line 9 and column 17 lines 17-23); a recording optical system for recording the record information onto the recording medium, by irradiating the recording surface with reference light based on the laser beam emitted from said laser light source while irradiating the recording surface with the spatial modulated laser beam as signal light (see the pick-up of Figure 1 element 11); and a displacing device for displacing the recording medium relative to said recording optical system such that irradiation positions of the signal light and the reference light are relatively displaced on the recording surface (Figure 1 elements 82 and 83), said recording optical system including: a splitting optical system for splitting the laser beam emitted from said laser light source into the signal light and the reference light in a previous step of said converting optical system (Figure 1 element 16); and a combining optical system for combining the one-dimensional spatial modulated signal light and the reference light to a same optical

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path, in a subsequent step of said one-dimensional spatial modulating device (element 20 of Figures 1 and 10).

Horimai, however, fails to specifically disclose while Ishii discloses a converting optical system for converting a laser beam emitted from said laser light source to a tabular laser beam whose cross section extends linearly and for emitting the laser beam such that a direction extending linearly is along the recording surface (see Figure 1 elements 36 and 39 and the discussion in column 5 lines 13-18 regarding the cylindrical concave lens and the spherical lens).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the cylindrical and spherical lenses of Ishii into the information recording apparatus of Horimai. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to decrease the diameter of the laser beam entering the one dimensional spatial light modulator such that manufacture of the spatial light modulator is simplified (as suggested by Ishii in column 5 lines 19-26).

Regarding claim 13, the combination of Horimai and Ishii further disclose wherein said splitting optical system splits the reference light such that the optical path of the reference light and the tabular laser beam are located side-by-side as viewed from the recording surface (see Figure 1 of Horimai and the optical paths of the reference light and the information light).

Regarding claim 14, the combination of Horimai and Ishii further disclose wherein said recording optical system further comprises a splitting optical system for

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splitting the laser beam emitted from said laser light source into the signal light and the reference light in a previous step of said converting optical system (see Horimai Figure 1 element 16), and the one-dimensional spatial modulated signal light and the reference light are combined to a same optical path and irradiated to the recording surface (see Figure 1 of Horimai and the optical paths of the reference light and the information light which are combined by element 20).

Regarding claim 15, the combination of Horimai and Ishii further disclose wherein said splitting optical system splits the reference light such that the optical path of the reference light and the tabular laser beam are located side-by-side as viewed from the recording surface (see Horimai Figure 1 element 16).

Regarding claim 16, the combination of Horimai and Ishii further disclose wherein the reference light is emitted from said laser light source together with the signal light (see Horimai Figure 1 element 12), and irradiated to the recording surface through said converting optical system (again note the discussion of Ishii in column 5 lines 13-18 regarding the cylindrical concave lens and the spherical lens), said one-dimensional spatial modulating device (Horimai Figure 1 elements 17 and 25), and said recording optical system (Horimai Figure 1 element 11).

Regarding claim 17, the combination of Horimai and Ishii further disclose wherein an axis in a longitudinal direction of said one-dimensional spatial modulating device is crossed with radial direction of the disc-shaped recording medium (see the SLM disclosed by Horimai, Figure 1 elements 17 and 25).

Regarding claim 18, the combination of Horimai and Ishii further disclose wherein said combining optical system combines the signal light and the reference light to a same optical path (see Figure 1 of Horimai), by multiplexing the signal light and the reference light (see the discussion in Horimai column 19 lines 51-57).

Regarding claim 20, the combination of Horimai and Ishii further disclose wherein said converting optical system emits the laser beam such that a flat surface of the tabular laser beam is parallel to the recording surface (see Ishii Figure 1 elements 36 and 39 in relation to the recording surface).

6. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Horimai (US Patent Number 7,002,891 B2) in view of Ishii et al. (US Patent Number 4,012,108), as applied to claim 12 above, and further in view of Psaltis et al. (US Patent Number 5,978,112).

Regarding claim 19, the combination of Horimai and Ishii disclose the information recording apparatus according to claim 12 but fail to specifically disclose while Psaltis discloses wherein said recording optical system records the record information onto the recording medium such that an axial direction of a Fourier image is shifted from a radial direction of the disc-shaped recording medium (see the discussion regarding shift multiplexing in column 1 line 42 – column 2 line 4, Figures 7, 17 and 18 and the corresponding discussion in column 6 lines 35-59 and column 12 line 64 – column 13 line 44).

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Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Psaltis into that of Horimai and Ishii and include the shift multiplexing technique. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to superimpose multiplex holograms without significant crosstalk (as suggested by Psaltis in column 2 line 1).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LaTanya Bibbins whose telephone number is (571)270-1125. The examiner can normally be reached on Monday through Friday 7:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571 272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/LaTanya Bibbins/
Examiner, Art Unit 2627

/Wayne Young/
Supervisory Patent Examiner, Art Unit 2627